Numerical Modeling of Tidal Effects in Accretion Discs

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Abstract

In the present work, we use a two dimensional time-dependent polytropic spectral code to study tidal effects in accretion discs, We assume an alpha viscosity prescription in a cool disc with a steady mass inflow at the outer radial boundary, as needed to model discs in CVs. In this case the viscosity of the disc ($\alpha = 0.1$) prevent a ring to form as the matter is accreted in the inner disc through viscous dissipation When the mass of the companion is not too low ($q > 0.01$), tidal effect induces m 1, 2 modes in the inner part of the disc, thereby giving rise to oscillations The $m : 1$ mode which propagates outward in the disc, leads to a slightly eccentric motion of the spiral pattern. It is however unable to disrupt the flow into an elliptic precessing disc.